

Application No. 09/863,234
Docket No. WH5

Art Unit 3736
Examiner Lacyk, J.

Please amend the application, without prejudice, as follows:

In the Claims:

Please cancel claims 1-8 without prejudice.

Please add new claims 9 - 83 as follows:

9. (New) An appliance for administering a reduced pressure treatment to a wound, comprising:
- (a) a seamless cover configured to cover and enclose the wound and adapted to maintain reduced pressure at the site of the wound;
 - (b) reduced pressure supply means for connection to a source of suction, said reduced pressure supply means cooperating with said cover to supply said reduced pressure beneath said cover;
 - (c) a screen adapted to permit gas flow to and/or from the wound, said screen being located between said wound and said cover; and
 - (d) a fluid trap interconnected between said reduced pressure supply means and said cover for collection of wound exudates.
10. (New) The appliance as recited in claim 9 wherein said screen comprises a porous sheet.
11. (New) The appliance as recited in claim 9 wherein said cover includes an adhesive material adapted to secure said cover to the tissue surrounding the wound.
12. (New) The appliance as recited in claim 9 wherein said screen comprises a foam screen.
13. (New) An appliance for administering a reduced pressure treatment to a wound comprising:
- (a) a cover adapted to cover and enclose the wound and adapted to maintain reduced pressure at the site of the wound;
 - (b) a seamless seal adapted to seal said cover to tissue surrounding the wound;
 - (c) a source of suction, cooperating with said cover to supply said reduced pressure beneath said cover;
 - (d) a screen having an open cell foam disposed under said cover; and
 - (e) a fluid trap interconnected between said cover and said reduced pressure supply means, said trap adapted to capture wound exudates.
14. (New) An apparatus for treating a wound comprising:

(a) a vacuum system adapted to produce a reduced pressure, wherein said vacuum system includes a collection device for collecting fluid aspirated from the wound; and

(b) a reduced pressure appliance operably connected with said vacuum system adapted to apply said reduced pressure to the wound, the appliance including:

a cover adapted to cover and enclose the wound and to maintain reduced pressure at the site of the wound;

a seal adapted to seal said cover to tissue surrounding the wound;
reduced pressure supply means for connection with the vacuum system adapted to supply said reduced pressure within said cover to the wound; and

a screen positioned within the wound, said screen adapted to permit gas flow to and/or from the wound.

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15. (New) The apparatus as recited in claim 14 wherein said reduced pressure is from about 2 in. Hg below atmospheric pressure to about 7 in. Hg below atmospheric pressure.
16. (New) The apparatus of claim 14 wherein said reduced pressure supply means comprises a length of tubing, said collection device comprises an aspirating container connected along said length of tubing between said vacuum system and cover, and said collection device comprises a flotation valve within said aspirating container for blocking said tubing when a predetermined amount of fluid is collected within said container.
17. (New) The apparatus of claim 14 wherein said collection device comprises an expandable chamber and a sensing means for sensing expansion of said expandable chamber, said sensing means operatively connected with said vacuum system so that said reduced pressure is halted when a predetermined expansion of said expandable chamber is sensed by said sensing means.
18. (New) The apparatus of claim 14 wherein said reduced pressure supply means comprises a length of tubing and a filter along said tubing, said filter having pores that block the supply of reduced pressure via said tubing when said pores are filled with said fluid.

19. (New) A method for treating a wound, comprising:

- i. locating a cover over the wound to provide a chamber between the cover and the wound, said cover adapted for maintaining said reduced pressure to the wound;
- ii. sealing the periphery of said cover to tissue surrounding the wound;
- iii. operably connecting a vacuum system with said chamber at said seal for producing said reduced pressure;
- iv. interposing a fluid trap between said suction port and said vacuum source; and
- v. maintaining reduced pressure at the wound until the wound has progressed toward a selected stage of healing.

20. (New) The method as recited in claim 19 wherein said reduced pressure is from about 2 in Hg below atmospheric pressure to about 7 in Hg below atmospheric pressure.

21. (New) A method as recited in claim 19 wherein said reduced pressure is applied in alternating intervals of application and non-application.

22. (New) The method as recited in claim 21 wherein said pressure is from about 2 in. Hg below atmospheric pressure to about 7 in. Hg below atmospheric pressure.

23. (New) An appliance for administering a reduced pressure treatment to a wound comprising:

(a) a cover adapted to cover and enclose the wound and adapted to maintain reduced pressure at the site of the wound, wherein said cover is comprised of a seamless flexible sheet;

(b) a seal adapted to seal said cover to tissue surrounding the wound;

(c) a source of suction cooperating with said cover to supply said reduced pressure beneath said cover; and

(d) a fluid trap interposed between said cover and said source of suction.

24. (New) An appliance for administering a reduced pressure treatment to a wound comprising:

(a) a vacuum chamber adapted to cover and enclose the wound and to maintain reduced pressure at the site of the wound, wherein said vacuum chamber is sufficiently rigid to support said cover out of contact with the wound;

(b) a seal adapted to seal said cover to tissue surrounding the wound without contacting the wound;

(c) reduced pressure supply means for connection to a source of suction, said reduced pressure supply means cooperating with said vacuum chamber to supply said reduced pressure beneath said vacuum chamber, wherein said reduced pressure supply means comprises a suction port on said vacuum chamber; and

(d) a screen adapted to permit gas flow to and/or from the wound, for placement at a location within said vacuum chamber and secured in said location by the periphery of said vacuum chamber.

25. (New) The appliance of claim 24 wherein said screen comprises a flexible, sheet-like mesh.

26. (New) The appliance of claim 24 wherein said seal includes an adhesive material on the cover adapted to adhere to tissue surrounding the wound and a seal member at least partially overlying said cover.

27. (New) An apparatus for treating a wound comprising:

(a) a vacuum system adapted to produce a reduced pressure, wherein said vacuum system comprises:

i. a vacuum pump; and

ii. a filter for preventing said pump from venting micro-organisms aspirated from the wound; and

(b) a reduced pressure appliance operably connected with said vacuum system adapted to apply said reduced pressure to the wound, the appliance including:

a cover adapted to cover and enclose the wound and adapted to maintain reduced pressure at the site of the wound such that said cover is out of contact with the wound;

a seal disposed about the periphery of said cover and adapted to seal said cover to tissue surrounding the wound;

reduced pressure supply means for connection with the vacuum system
adapted to supply said reduced pressure to the wound, wherein
said reduced pressure supply means comprises a length of
tubing connected between said vacuum system and said cover;
and

a fluid trap interposed between said cover and said reduced pressure
supply means.

28. (New) The apparatus of claim 27 wherein said filter is connected along said tubing
between said pump and said fluid trap for preventing contamination of said pump.

29. (New) The apparatus of claim 27, wherein said vacuum system comprises control
means for cyclically controlling said production of reduced pressure in alternating
periods of production and non-production of reduced pressure.

30. (New) A method of treating a wound comprising the steps of:

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- i. placing a porous screen over the wound;
 - ii. locating a cover over the wound said cover having a suction port;
 - iii. sealing the periphery of said cover to tissue surrounding the wound to
form a continuous seal;
 - iv. operably connecting said suction port with a vacuum system for
producing said reduced pressure;
 - v. interposing a fluid trap between said suction port and said vacuum
source; and
 - vi. maintaining said reduced pressure until the wound had progressed
toward a selected stage of healing.

31. (New) The method of claim 30 wherein said reduced pressure is applied in alternating
periods of application and non-application.

32. (New) The method of claim 30, wherein said selected stage of healing is a reduction in
bacterial density in the wound by at least 50%.

33. (New) A device for promoting closure of a wound comprising:

- (a) a deformable cover adapted to be placed over the wound;

(b) an adhesive layer on the cover adapted to form an impermeable seal between said cover and tissue surrounding the wound; and

(c) supply means for supplying reduced pressure to said enclosed volume and for deforming said cover so as to exert tension upon the tissue surrounding the wound; and

(d) a fluid trap interposed between said cover and said supply means.

34. (New) A method of promoting attachment of a skin graft onto a wound, comprising the steps of:

(a) attaching the graft to the wound; and

(b) applying reduced pressure to the graft to promote blood circulation within the graft, wherein said applying step comprises the steps of:

i. placing a porous screen over the graft on the wound;

ii. locating a cover over the graft on the wound, said cover adapted for maintaining said reduced pressure to the wound, said cover having a suction port;

iii. sealing the periphery of said cover to tissue surrounding the wound;

iv. operably connecting said suction port with a vacuum system for producing said reduced pressure; and

v. interposing a fluid trap between said suction port and said vacuum source.

35. (New) The method of claim 34 wherein the graft is a skin flap, the method comprising the steps of:

(a) applying reduced pressure to a region of skin adjacent to the wound, and

(b) forming the flap by detaching skin from said region prior to said attaching step.

36. The method of claim 34 comprising the steps of:

(a) applying reduced pressure to a region of skin for use as the skin graft; and

(b) forming the graft by detaching skin from said region.

37. (New) An apparatus for facilitating the healing of wounds, comprising:

a suction pump for creating a reduced pressure on the area of tissue including and surrounding the wound;

a seal member cooperating with said suction pump for maintaining said reduced pressure on said wound by contacting the tissue surrounding said wound; and

a screen for positioning at the wound within the seal member for permitting gas flow to and/or from the wound.

38. (New) The apparatus according to claim 37 in which said screen comprises an open-cell polymer foam.
39. (New) The apparatus according to claim 37 in which said screen comprises a porous, elastic, semi-rigid member.
40. (New) The apparatus according to claim 37, in which said sealing includes a flexible sealing rim in contact with said tissue surrounding said wound.
41. (New) The apparatus according to claim 37, in which said sealing includes a flexible polymer sheet overlying said screen means, said polymer sheet having an adhesive on at least a surface facing the wound to attach and seal said polymer sheet to said surrounding tissue.
42. (New) The apparatus according to claim 37, in which said sealing includes a sealing cuff in contact with said tissue surrounding the wound.
43. (New) The apparatus according to claim 37, in which said pump provides at least 0.1 pounds per square inch suction.
44. (New) The apparatus according to claim 37, in which said pump provides at least 3 pounds per square inch suction.
45. (New) The apparatus according to claim 37, in which said pump includes pump means for providing at least 14 pounds per square inch suction.
46. (New) An apparatus according to claim 37, in which said pump operates cyclically to provide periods of application and non-application of suction.
47. (New) An apparatus according to claim 37, in which said pump operates continuously.
48. (New) An apparatus according to claim 37, in which said pump supplies a reduced pressure between about 0.5 and 0.99 atmospheres to the wound.
49. (New) An apparatus according to claim 37, wherein said pump supplies a reduced pressure between about 0.3 and 0.99 atmospheres to the wound.

50. (New) An apparatus according to claim 37, wherein said pump supplies a reduced pressure between about 0.5 and 0.8 atmospheres to the wound.
51. (New) An apparatus for applying reduced pressure to a wound comprising:
a liquid impermeable seal;
a foam section positioned beneath said seal to overlie the wound such that said reduced pressure is maintained within said foam and evenly distributed across the wound surface; and
a flexible tube having an inlet end in communication with said foam section and an outlet end for extending from beneath said seal and for supplying said reduced pressure.
52. (New) An apparatus for treating a wound, comprising:
a foam section configured to overlie the wound;
a chamber about said foam section, said chamber adapted to form a seal with tissue surrounding the wound for maintaining reduced pressure beneath said chamber; and
a tubular member having a first end inserted beneath at least a portion of the foam section and having a second end extending from beneath the seal edge to a location external to said chamber for supplying reduced pressure beneath the chamber.
53. (New) The apparatus of claim 52 wherein said first end of said tubular member is embedded within the foam section.
54. (New) The apparatus of claim 52 including a vacuum source that supplies a reduced pressure between about 0.3 and 0.99 atmospheres to the wound.
55. (New) The apparatus of claim 52 including a vacuum source that supplies a reduced pressure between about 0.5 and 0.99 atmospheres to the wound.
56. (New) The apparatus of claim 52 including a vacuum source that supplies a reduced pressure between about 0.5 and 0.8 atmospheres to the wound.
57. (New) An apparatus for treating a wound, comprising:
a semi-rigid cover for positioning over the wound and for maintaining a reduced pressure upon said wound, said cover having an external fluid communication port;
a seal for sealing said cover about the outer periphery of the wound;

a tube extending from said fluid communication port of said cover for supplying said reduced pressure; and

a screen for positioning beneath said cover at the wound for permitting gas flow to and/or from the wound.

58. (New) The apparatus of claim 57 wherein said screen is a porous, elastic sheet.

59. (New) The apparatus of claim 57 wherein said screen is an open-cell, elastic foam.

60. (New) An apparatus for facilitating the healing of wounds, comprising:

a suction pump for creating a reduced pressure on the area of tissue including and surrounding the wound;

a seal member cooperating with said suction pump for maintaining said reduced pressure on said wound by contacting the tissue surrounding said wound, wherein said sealing member comprises a cover;

a screen for positioning at the wound within the seal member for permitting gas flow to and/or from the wound.

B) 61. (New) The apparatus according to claim 60 wherein said screen comprises an elastic, open-cell polymer foam.

62. (New) The apparatus according to claim 60 wherein said screen comprises an elastic, porous, semi-rigid member.

63. (New) The apparatus according to claim 60 wherein said cover includes a flexible polymer sheet having an adhesive on at least a surface facing the wound to attach and seal said polymer sheet to said surrounding tissue.

64. (New) The apparatus according to claim 60 wherein said vacuum means includes pump means for providing at least 0.1 pounds suction.

65. (New) The apparatus according to claim 60 wherein said suction pump provides at least 3 pounds suction.

66. (New) The apparatus according to claim 60 wherein said suction pump provides at least 14 pounds suction.

67. (New) The apparatus according to claim 60 wherein said suction pump operates continuously.

68. (New) The apparatus according to claim 60 wherein said suction pump operates cyclically.
69. (New) The apparatus according to claim 68 wherein said suction pump provides periods of application and non-application of suction with the ratio of duration of application period to non-application period between about 1:10 and 10:1.
70. (New) The apparatus of claim 69 wherein said duration of said application is about 5 minutes.
71. (New) The apparatus of claim 70 wherein said duration of said non-application is about 5 minutes.
72. (New) An apparatus for facilitating the healing of wounds, comprising:
a suction pump for creating a reduced pressure on the area of tissue including and surrounding the wound;
a seal member cooperating with said suction pump for maintaining said reduced pressure on said wound by contacting the tissue surrounding said wound; and
a screen for positioning at the wound within the seal member, said screen having a pore size sufficiently large to permit gas flow to and/or from the wound.
73. (New) The apparatus according to claim 72 wherein said screen comprises an elastic, open-cell polymer foam.
74. (New) The apparatus according to claim 72 wherein said screen comprises a flat, porous, elastic, semi-rigid member.
75. (New) The apparatus according to claim 72 wherein said sealing includes a flexible polymer sheet overlying said screen means, said polymer sheet having an adhesive on at least a surface facing the wound to attach and seal said polymer sheet to said surrounding tissue.
76. (New) The apparatus according to claim 72 wherein said suction pump provides at least 0.1 pounds suction.
77. (New) The apparatus according to claim 72 wherein said suction pump provides at least 3 pounds suction.
78. (New) The apparatus according to claim 72 wherein said suction pump provides at least 14 pounds suction.

Application No. 09/863,234
Docket No. WH5

Art Unit 3736
Examiner Lacyk, J.

79. (New) The apparatus according to claim 72 wherein said suction pump operates continuously.
80. (New) The apparatus according to claim 72 wherein said suction pump operates cyclically to provide periods of application and non-application of suction with the ratio of duration of application period and non-application period between about 1:10 and 10:1.
81. (New) The apparatus according to claim 80 wherein said application period is about 5 minutes.
82. (New) The apparatus according to claim 81 wherein said non-application period is about 5 minutes.
83. (New) An appliance for administering a reduced pressure treatment to a wound comprising:
- (a) a cover for maintaining reduced pressure at the site of the wound and adapted to cover and enclose the wound, such that said cover remains out of contact with said wound during application of a reduced pressure;
 - (b) a seal adapted to seal said cover to tissue surrounding the wound;
 - (c) reduced pressure supply for connection to a source of suction, said reduced pressure supply cooperating with said cover to supply said reduced pressure beneath said cover; and
 - (d) a fluid trap interposed between said cover and said source of suction.

REMARKS

Claims 9-83 are pending in the application. Claims 9-83 have been newly added by the above amendments to claim additional aspects of Applicants' invention. The Examiner had rejected claims 1-8. However, Applicants have canceled claims 1-8.